Adjunct therapies to improve outcomes after botulinum toxin injection in children: A systematic review

Titre	Adjunct therapies to improve outcomes after botulinum toxin injection in children: A systematic review
Type de publication	Article de revue
Auteur	Mathevon, L [1], Bonan, I [2], Barnais, J-L [3], Boyer, Françoise [4], Dinomais, Mickaël [5]
Editeur	Elsevier
Type	Article scientifique dans une revue à comité de lecture
Année	2018
Langue	Anglais
Date	29 Juillet 2018
Titre de la revue	Annals of physical and rehabilitation medicine
ISSN	1877-0665
Mots-clés	botulinum toxin [6], Casting [7], Cerebral palsy [8], Rehabilitation programme [9], Spasticity [10]

Résumé en anglais	BACKGROUND: Botulinum toxin (BTX) injection alone is not sufficient to treat spasticity in children, notably those with cerebral palsy; thus, there is an emerging trend for adjunct therapies to offer greater outcomes than BTX alone. OBJECTIVE: The aim of this systematic review was to evaluate the general effectiveness of adjunct therapies regardless of their nature in children with spasticity. METHODS: Medline, Cochrane and Embase databases were searched from January 1980 to March 15, 2018 for reports of parallel-group trials (randomized controlled trials [RCTs] and non-RCTs) assessing adjunct therapies after BTX injection for treating spasticity in children. Two independent reviewers extracted data and assessed the risk of bias by using the PEDro scale for RCTs and Downs and Black scale (D&B) for non-RCTs. RESULTS: Overall, 20 articles involving 662 participants met the inclusion criteria. The average quality was good for the 16 RCTs (mean PEDro score 7.4 [SD 1.6]) and poor to moderate for the 4 non-RCTs (D&B score 9 to 17). Adjunct therapies consisted of casting/posture, electrical stimulation, resistance training and rehabilitation programmes. Casting associated with BTX injection improved the range of passive and active motion and reduced spasticity better than did BTX alone (9 studies), with a follow-up of 1 year. Resistance training enhanced the quality and performance of muscles without increasing spasticity. Only 3 rehabilitation programmes were studied, with encouraging results for activities. CONCLUSION: Lower-limb posture with casting in children has a high level of evidence, but the long-term efficacy of short-leg casting needs to be evaluated. A comparison between the different modalities of casting is missing, and studies specifically devoted to testing the different kinds of casting are needed. Moreover, the delay to casting after BTX injection is not clear. Data on electrical stimulation are not conclusive. Despite the small number of studies, resistance training could be an interesting adjunct therapy notably to avoid loss of strength after BTX injection. Rehabilitation programmes after BTX injection still need to be evaluated.
URL de la notice	http://okina.univ-angers.fr/publications/ua18208 [11]
DOI	10.1016/j.rehab.2018.06.010 [12]
Lien vers le document	https://www.sciencedirect.com/science/article/pii/S1877065718314301?via%... [13]!
Titre abrégé	Ann Phys Rehabil Med
Identifiant (ID) PubMed	30063979 [14]

Liens

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